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THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP  
100 GALLERIA PARKWAY, NW  
STE 1750  
ATLANTA, GA 30339-5948

EXAMINER

DEAN, RAYMOND S

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2684

DATE MAILED: 07/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/863,164

Applicant(s)

LEVONAS ET AL.

Examiner

Raymond S Dean

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 4/16/04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1 - 29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 - 29 is/are allowed.
- 6) ☒ Claim(s) 1 - 3 and 6 - 8 is/are rejected.
- 7) ☒ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over McGhee et al. (US 6,658,049 B1) in view of Martin et al. (3,735,056).

Regarding Claim 1, McGhee teaches a cancellation system for providing cancellation of interference in a repeater (Column 1 lines 65 – 67, Column 2 lines 1 – 17), located between a first endpoint and a second endpoint (Column 1 lines 58 – 63, since the data is transmitted downstream to a home, which is a second endpoint, there is an entity from which said data is transmitted, which is the first endpoint) comprising: an echo canceller for canceling echo within said system (Column 2 lines 8 – 10, the DSP is the echo canceller); a repeater canceller logically connected to said echo canceller, wherein said repeater canceller cancels coupled signals within said system (Column 2 lines 13 – 17, Column 2 lines 63 – 65, one DSP or two DSPs can be used to cancel the cross talk or coupled signals), wherein said repeater canceller cancels coupled signals by using a data signal transmitted from said second end point to said first endpoint and outputs a second signal (Figure 2, Column 3 lines 4 – 8, the data signal is

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the replica of the transmitted signal, Figure 2 shows that the repeater is a two way or bi-directional repeater which means that said transmitted signal can be the signal transmitted from the second endpoint to the first endpoint, the DSP receives a signal corrupted by cross talk and cancel said cross talk to produce a new or second signal); a bulk delay device that provides a delay to said data signal prior to said data signal being received by said repeater canceller (Column 3 lines 4 – 8, the DSP delays the replica signal before it uses it to eliminate the cross talk).

McGhee does not teach a pulse-shaping filter logically connected to said repeater canceller, said pulse-shaping filter receives the second signal and transmits a third signal, the third signal in compliance with an xDSL protocol.

Martin teaches a pulse-shaping filter, said pulse-shaping filter receives a first signal and transmits a second signal, the second signal in compliance with an xDSL protocol (Figure 1, Column 2 lines 58 – 59, Column 4 lines 30 – 33, since xDSL systems use a twisted pair configuration the signal would be in compliance with an xDSL protocol).

McGhee and Martin both teach a repeater in a twisted pair communication system thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the pulse-shaping filter taught in Martin in the cancellation system of McGhee for the purposes of properly regenerating a signal and reconstituting the two bit signal levels used for pcm transmission, which is a modulation used in xDSL systems.

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3. Claims 2, 6, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGhee et al. (US 6,658,049 B1) in view of Bolton et al. (3,868,484).

Regarding Claim 2, McGhee teaches a cancellation system for providing cancellation of interference in a repeater, located between a first endpoint and a second endpoint (Column 1 lines 58 – 63, Column 1 lines 65 – 67, Column 2 lines 1 – 17, since the data is transmitted downstream to a home, which is a second endpoint, there is an entity from which said data is transmitted, which is the first endpoint), comprising: an echo canceller for canceling echo within said system (Column 2 lines 8 – 10, the DSP is the echo canceller); and a repeater canceller logically connected to said echo canceller, wherein said repeater canceller cancels coupled signals within said system (Column 2 lines 13 – 17, Column 2 lines 63 – 65, one DSP or two DSPs can be used to cancel the cross talk or coupled signals).

McGhee does not teach a power feed network, wherein said power feed network communicates signals between said first endpoint and said second endpoint and coupled signals are caused by said power feed network.

Bolton teaches a power feed network, wherein said power feed network communicates signals between said first endpoint and said second endpoint and coupled signals are caused by said power feed network (Figure 1, Column 3 lines 33 – 35, real world power feeds will emanate electromagnetic energy that can be coupled into the cable).

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McGhee and Bolton both teach a repeater in a wire-line communication system thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the power feed taught in Bolton in the cancellation system of McGhee for the purpose of providing power to the repeater of said cancellation system.

Regarding Claim 6, McGhee in view of Bolton teaches all of the claimed limitations recited in Claim 2. McGhee further teaches a repeater canceller that cancels coupled signals by using a reference signal, wherein said reference signal is a data signal transmitted from said second endpoint to said first endpoint (Figure 2, Column 3 lines 4 – 8, the data signal is the replica of the transmitted signal, Figure 2 shows that the repeater is a two way or bi-directional repeater which means that said transmitted signal can be the signal transmitted from the second endpoint to the first endpoint).

Regarding Claim 8, McGhee in view of Bolton teaches all of the claimed limitations recited in Claim 2. McGhee further teaches a bulk delay device, wherein said bulk delay device provides a delay to a data signal being transmitted via said system before said data signal is transmitted to said repeater canceller (Column 3 lines 4 – 8, the DSP delays the replica signal before it uses it to eliminate the cross talk).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over McGhee et al. (US 6,658,049 B1) in view of Bolton et al. (3,868,484) as applied to Claim 2 above, and in further view of Erreygers (US 6,236,664 B1).

Regarding Claim 3, McGhee in view of Bolton teaches all of the claimed limitations recited in Claim 2. McGhee in view of Bolton does not specifically teach a first endpoint that is a central office and a second endpoint that is a customer premise.

Erreygers teaches a first endpoint that is a central office and a second endpoint that is a customer premise (Figure 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the central office and customer premise taught in Erreygers in the DSL transmission system of McGhee for the purpose of adequately providing broadband services to the home.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over McGhee et al. (US 6,658,049 B1) in view of Bolton et al. (3,868,484) as applied to Claim 6 above, and in further view of Watkinson (US 2002/0191552 A1).

Regarding Claim 7, McGhee in view of Bolton teaches all of the claimed limitations recited in Claim 6. McGhee further teaches a data signal derived from a second repeater canceller resulting from data transmission from said second endpoint to said first endpoint (Figure 2, Column 2 lines 63 – 65, Column 3 lines 4 – 8, both DSPs can be used to cancel the cross talk thus there can be two repeater cancellers, the replica signal is created from monitoring the signal transmitted from the second DSP (22), Figure 2 shows that the repeater is a two way or bi-directional repeater which means that said transmitted signal can be the signal transmitted from the second endpoint to the first endpoint).

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McGhee in view of Bolton does not specifically teach determining a series of proper coefficients for use in minimizing coupled signals.

Watkinson teaches determining a series of proper coefficients for use in minimizing coupled signals (Sections 0036 – 0038).

It would have been obvious to one of ordinary skill in the art to use the method of determining a series of proper coefficients for use in minimizing coupled signals taught in Watkinson in the DSL transmission system such that the cross talk that is a characteristic of such said transmission system is eliminated thus enabling the customer to receive reliable broadband services.

***Allowable Subject Matter***

6. Claims 4 and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Regarding Claim 4, McGhee teaches a repeater that provides signal continuity from the first endpoint to the second endpoint and eliminates the coupled signals or cross talk but the prior art of record fails to specifically show a tone through capacitor located within said repeater that ensures said signal continuity.

Regarding Claims 5, Bolton teaches a power system that provides power to a repeater but the prior art of record fails to specifically show a switch that is located in one of said repeaters for the purposes of providing downstream power



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to a second repeater located between said first endpoint and said second endpoint.

7. Claims 9 – 29 are allowed. The following is a statement of reasons for the indication of allowable subject matter:

Regarding Claims 9 - 16, McGhee teaches a method of canceling interference in a repeater located between a first endpoint and a second endpoint (Column 1 lines 58 – 63, Column 1 lines 65 – 67, Column 2 lines 1 – 17, since the data is transmitted downstream to a home, which is a second endpoint, there is an entity from which said data is transmitted, which is the first endpoint), comprising the steps of: providing a first and second communication path in said repeater (Figure 2, the repeater can repeat and regenerate signals in the upstream direction and the downstream direction, said upstream and downstream directions are the two communication paths); amplifying a data signal received from said first end point, wherein said data signal is carried through said repeater in said first communication path (Figure 2, Column 2 lines 1 – 17); removing local echo from said amplified data signal (Column 2 lines 8 – 10, the DSP is the echo canceller); removing coupled signals from said amplified data signal; and transmitting said data signal to said second endpoint (Column 2 lines 1 – 17, Column 2 lines 63 – 65, one DSP or two DSPs can be used to cancel the cross talk or coupled signals). The prior art of record, however, fails to specifically teach wherein the coupled signals are caused by said second

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communication path. Claims 10 – 14 and 16 depend on Claim 9 and Claim 15 depends on Claim 14 therefore examiner gives same reason as set forth above.

Regarding Claims 17 – 24, McGhee teaches a system for providing cancellation of interference in a repeater, located between a first endpoint and a second endpoint (Column 1 lines 58 – 63, Column 1 lines 65 – 67, Column 2 lines 1 – 17, since the data is transmitted downstream to a home, which is a second endpoint, there is an entity from which said data is transmitted, which is the first endpoint), comprising: means for amplifying a data signal received from said first end point (Column 2 lines 1 – 17); means for providing a first communication path through said repeater, wherein said first communication path carries said amplified data signal (Figure 2, the repeater can repeat and regenerate signals in the upstream direction and the downstream direction, said upstream and downstream directions are the two communication paths); means for providing a second communication path through said repeater (Figure 2, the repeater can repeat and regenerate signals in the upstream direction and the downstream direction, said upstream and downstream directions are the two communication paths); means for removing local echo from said amplified data signal (Column 2 lines 8 – 10, the DSP is the echo canceller); means for removing coupled signals from said amplified data signal; and means for transmitting said data signal to said second endpoint (Column 2 lines 1 – 17, Column 2 lines 63 – 65, one DSP or two DSPs can be used to cancel the cross talk or coupled signals). The prior art of record, however, fails to specifically teach wherein the coupled signals are caused by said second communication

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path. Claims 18 – 24 depend on Claim 17 therefore examiner gives same reason as set forth above.

Regarding Claims 25 - 29, McGhee teaches a signal repeater located between a first endpoint and a second endpoint, the signal repeater receiving a signal from the first endpoint and transmitting the signal to the second endpoint (Figure 2), the repeater comprising: a first signal processor having a first receive communication path and a first transmit communication path, wherein the first signal processor receives the signal and processes the signal along the first receive communication path (Figure 1, Figure 2, the first signal processor is DSP (20), the repeater can regenerate signals in the upstream direction and the downstream direction thus both the first DSP (20) and the second DSP (22) will have a first and second receive/transmit communication path); a second signal processor in communication with the first signal processor (Figure 1), the second signal processor having a second receive communication path and a second transmit communication path, wherein the second signal processor receives the signal and processes the signal along the second transmit communication path (Figure 1, Figure 2, the repeater can regenerate signals in the upstream direction and the downstream direction thus both the first DSP (20) and the second DSP (22) will have a first and second receive/transmit communication path). McGhee also teaches a cross talk signal introduced by transmitting the signal from the repeater (Column 3 lines 4 – 8).

Murphy (US 6,181,791) teaches an echo canceller connected to a receive communication path and a transmit communication path, wherein the echo

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canceller receives the signal carried through the transmit communication path and generates an echo cancellation signal for canceling an echo of the signal in the receive communication path (Figure 2, Column 6 lines 34 – 50).

Bingel et al. (US 6,173,021) teaches a repeater canceller connected to a receive communication path, wherein the repeater canceller receives a reference signal related to the signal and generates a cross talk cancellation signal for canceling in the receive communication path a cross talk signal (Column 3 lines 15 – 24). There is, however, lack of motivation to modify McGhee with Murphy and Bingel because the echo cancellation and cross talk cancellation are already conducted by the two DSPs (20,22) in the repeater of McGhee.

### ***Response to Arguments***

8. Applicant's arguments with respect to Claims 1 and 2 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory

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action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication should be directed to  
Raymond S. Dean at telephone number (703) 305-8998.

If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung, can be reached at (703) 308-7745. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Or faxed to:

(703) 872-9314 (for Technology center 2600 only)

Hand – delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist). Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



  
**NAY MAUNG**  
**SUPERVISORY PATENT EXAMINER**